

said guide plate being interposed between said liquid crystal layer and the second polarization plate so that said illumination output face is directed to the front side of said liquid crystal layer.

REMARKS

Claims 1, 9 and 17 have been amended. Claims 1-17, 19, 21, 23, 25 and 27-29 are pending and under consideration.

REJECTION UNDER 35 U.S.C. § 102

Claims 1-16 were rejected under 35 U.S.C. §102(e) as being anticipated by Hira et al. (U.S. 5,961,198). This rejection is respectfully traversed for the reasons stated below. However, prior to providing our response to this rejection, a brief summary of the present invention is provided below.

The present invention is directed to liquid crystal displays providing several advantageous features and operations over the prior art. For example, the present invention provides, among other things, liquid crystal displays: a) where ambient light is incident to the front side of the liquid crystal display panel or liquid crystal layer, b) where a reflection plate is disposed at the back of the liquid crystal display panel or liquid crystal layer, and c) where the surface light source device to provide auxiliary lighting supplies light to the front side of the liquid crystal display panel or liquid crystal layer, together in a front lighting arrangement of liquid crystal displays. In addition to the above benefits, additional benefits of the present invention over the prior art include, for example, d) where the illumination output face of the guide plate is provided with no light scattering properties. It is to be noted that the illumination output face supplies light toward the front face of the liquid crystal display panel or the liquid crystal layer. Yet another benefit of the present invention over the prior art includes e) where the back face of the guide plate provides a light control face with emission promoting properties which help light propagating within the guide plate to escape from the illumination output face. It is to be noted that the light emitted from the illumination output face is not directed to the ambient side, but is directed to the front side of the liquid crystal display panel or liquid crystal layer.

Rejection of claims 1-16

At page 2 of the Office action, the Examiner states that Hira et al. shows at figure 30 "the light source 1, light guide plate 2 containing small convexes on the back face, polarizing plate

31, transistor array 32, liquid crystal cell array 33, and color filter 35." The Examiner also states that "figures 18 and 19 show perspective views of the back face of the light guide plate according to various embodiments."

In contrast to the present invention as recited in independent claim 1 and 9, it is respectfully submitted that Hira et al. is not directed to liquid crystal displays of the type providing the features of a front lighting arrangement as pointed out above, but instead is limited to only back lighting arrangements, and therefore Hira et al. would have no purpose for providing many of the features of the present invention as pointed out above. More specifically, it is respectfully submitted that Hira et al. does not teach or suggest, among other things, "a surface light source device of side light type applied to auxiliary lighting in a liquid crystal display including a reflection plate and a liquid crystal display panel having a front face for being supplied with ambient light and a back face along which said reflection plate is disposed," together with "said illumination output face is provided with no light scattering property and supplies light toward said front face of said liquid crystal display panel; said back face provides a light control face provided with emission promoting properties which help light propagating within the guide plate to escape from said illumination output face," as recited in independent claim 1 of applicants' invention, as amended. Further, Hira et al. does not teach or suggest, among other things, "a liquid crystal display panel having a front face for being supplied with ambient light and a back face; a reflection plate disposed along said back face of said liquid crystal display panel, and a surface light source device of side light type for auxiliary lighting, wherein said surface light source device of side light type comprises a guide plate and a primary light source to supply primary light to an incidence end face provided by a minor face of the guide plate and said guide plate having major faces to provide a back face and an illumination output face; wherein said illumination output face is provided with no light scattering property and supplies light toward [a] said front face of said liquid crystal display panel, and said back face provides a light control face provided with emission promoting properties which help light propagating within the guide plate to escape from said illumination output face," as recited in independent claim 9 of applicants' invention. In order for a document to anticipate a claim, the document must teach every element of the claim. See MPEP 2131. Further, in the event that the Office Action is relying on the theory of inherency in any manner, "the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). See also MPEP 2112. Accordingly, since Hira et al. does not teach or suggest each of the features recited in claims 1 and 9, it is

respectfully submitted that this document cannot be properly used to reject these claims.

For at least the above reasons, it is respectfully submitted that independent claims 1 and 9 are allowable over Hira et al., and withdrawal of this rejection and allowance of these claims are earnestly solicited. Further, for at least the reason that claims 2-8 depend from allowable independent claim 1, and claims 10-16 depend from allowable independent claim 9, these claims are also allowable.

REJECTION UNDER 35 U.S.C. § 103

Claims 17, 19, 21, 23, 25 and 27-29 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hira et al. (U.S. 5,961,198). This rejection is respectfully traversed for the reasons stated below.

At page 3 of the Office action, the Examiner states that "although Hira et al. does not disclose a reflection plate and polarizing plates in the positions as claimed by the applicant, such an arrangement was conventional for reflection type liquid crystal display devices," and "therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to arrange polarizing plates and a reflection plate as claimed by applicant within the display device of Hira et al. because it would have been conventional to do so."

Similar to the points made above addressing the rejection of claims 1-16, it is respectfully submitted that Hira et al. is limited to only back lighting arrangements, and therefore does not provide many of the features as recited in independent claim 17. More specifically, Hira et al. does not teach or suggest, among other things, "a liquid crystal layer being supplied with ambient light from a front side of the liquid crystal layer; a reflection plate disposed at a back side of said liquid crystal layer; a first polarization plate interposed between said liquid crystal layer and said reflection plate; a second polarization plate disposed at the front side of said liquid crystal layer; and, a surface light source device of side light type for auxiliary lighting which comprises a guide plate and a primary light source to supply primary light to an incidence end face provided by a minor face of the guide plate, said guide plate having major faces to provide a back face and an illumination output face, wherein said illumination output face is provided with no light scattering property, said back face provides a light control face provided with emission promoting properties which help light propagating within the guide plate to escape from said illumination output face; and said guide plate being interposed between said liquid crystal layer and the second polarization plate so that said illumination output face is directed to the front side of said liquid crystal layer," as recited in independent claim 17 of applicants' invention,

as amended. Further, for at least the reason that claims 19, 21, 23, 25 and 27-29 depend from allowable independent claim 17, it is respectfully submitted that these claims are also allowable.

It is respectfully submitted that an Information Disclosure Statement has been filed together with this amendment.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please AMEND the following claims:

1. (AS TWICE AMENDED) A surface light source device of side light type applied to auxiliary lighting in a liquid crystal display including a reflection plate and a liquid crystal display panel having a front face for being supplied with ambient light and a back face along which said reflection plate is disposed, comprising:

a guide plate; and

a primary light source to supply primary light to an incidence end face provided by a minor face of the guide plate, said guide plate having major faces to provide a back face and an illumination output face, wherein

said illumination output face is provided with no light scattering property and supplies light toward [a] said front face of said liquid crystal display panel;

said back face provides a light control face provided with emission promoting properties which help light propagating within the guide plate to escape from said illumination output face.

9. (AS TWICE AMENDED) A liquid crystal display comprising:

a liquid crystal display panel having a front face for being supplied with ambient light and a back face;[,]

a reflection plate disposed along said back face of said liquid crystal display panel, and

a surface light source device of side light type for auxiliary lighting, wherein

said surface light source device of side light type comprises a guide plate and a primary light source to supply primary light to an incidence end face provided by a minor face of the guide plate and said guide plate having major faces to provide a back face and an illumination output face; wherein

said illumination output face is provided with no light scattering property and supplies light toward [a] said front face of said liquid crystal display panel; and,

said back face provides a light control face provided with emission promoting [property] properties which [helps] help light propagating within the guide plate to escape from said illumination output face.

17. (AS TWICE AMENDED) A liquid crystal display comprising:
a liquid crystal layer being supplied with ambient light from a front side of the liquid crystal layer;
a reflection plate disposed at a back side of said liquid crystal layer;
a first polarization plate interposed between said liquid crystal layer and said reflection plate;
a second polarization plate disposed at [a] the front side of said liquid crystal layer; and,
a surface light source device of side light type for auxiliary lighting which comprises a guide plate and a primary light source to supply primary light to an incidence end face provided by a minor face of the guide plate, said guide plate having major faces to provide a back face and an illumination output face, wherein
said illumination output face is provided with no light scattering property,
said back face provides a light control face provided with emission promoting properties which help light propagating within the guide plate to escape from said illumination output face;
and
said guide plate being interposed between said liquid crystal layer and the second polarization plate so that said illumination output face is directed to the front side of said liquid crystal layer.